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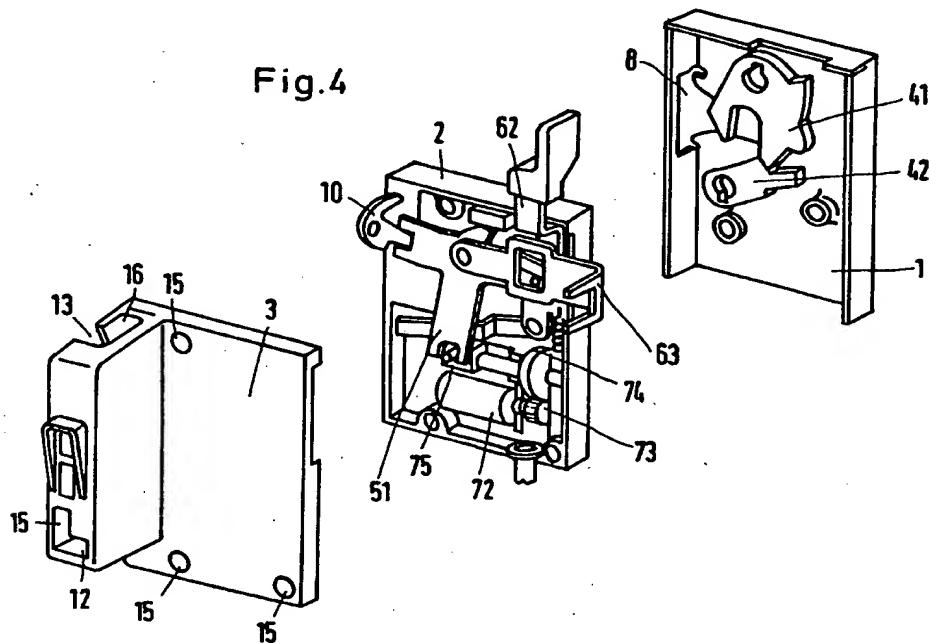
E2A

Selected US specifications from IPC sub-class E05B

(54) Motor vehicle door lock

(57) A motor vehicle door lock, having greater security, comprises a casing which consists of a closure-member box (1), a locking-member box (2) and a connection box (3) formed as independent prefabricated units which can be assembled together like blocks with the aid of assembly screws to form a security capsule, in which the connection box (3) is enclosed except for apertures (12, 13) for the insertion of a inner-actuation setting rod (61) and a inner security setting rod (64), while the only components protruding from the locking-member box are a outer-actuation lever (62), a locking-cylinder connection lever (63) and a multicore cable (71) feeding a setting motor (72) of a central locking system.

Fig.4



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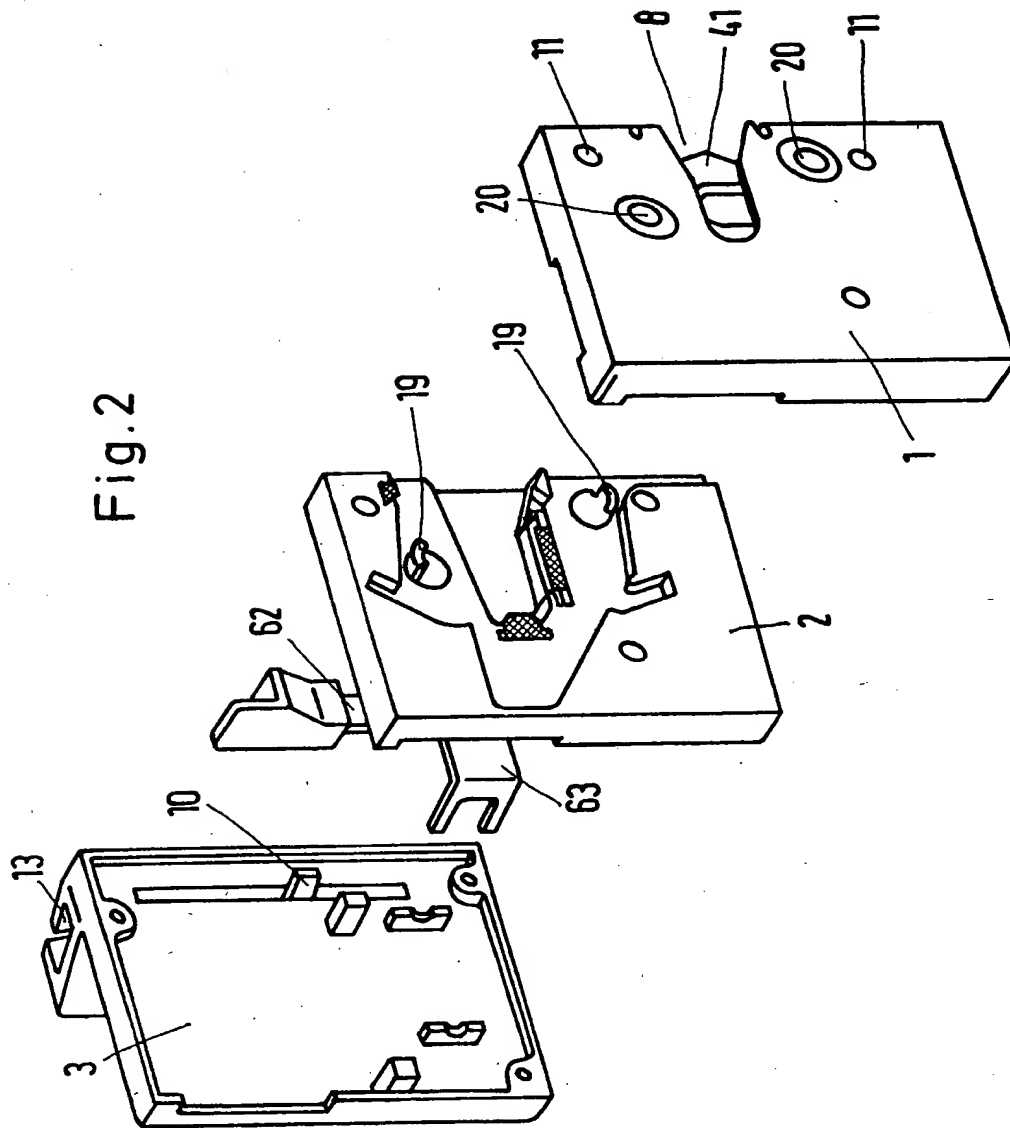
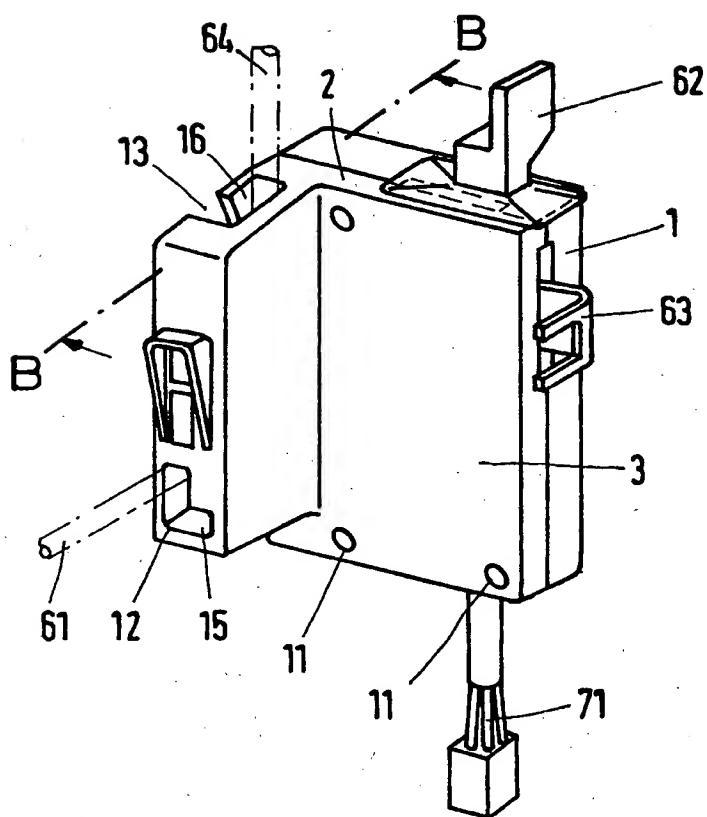
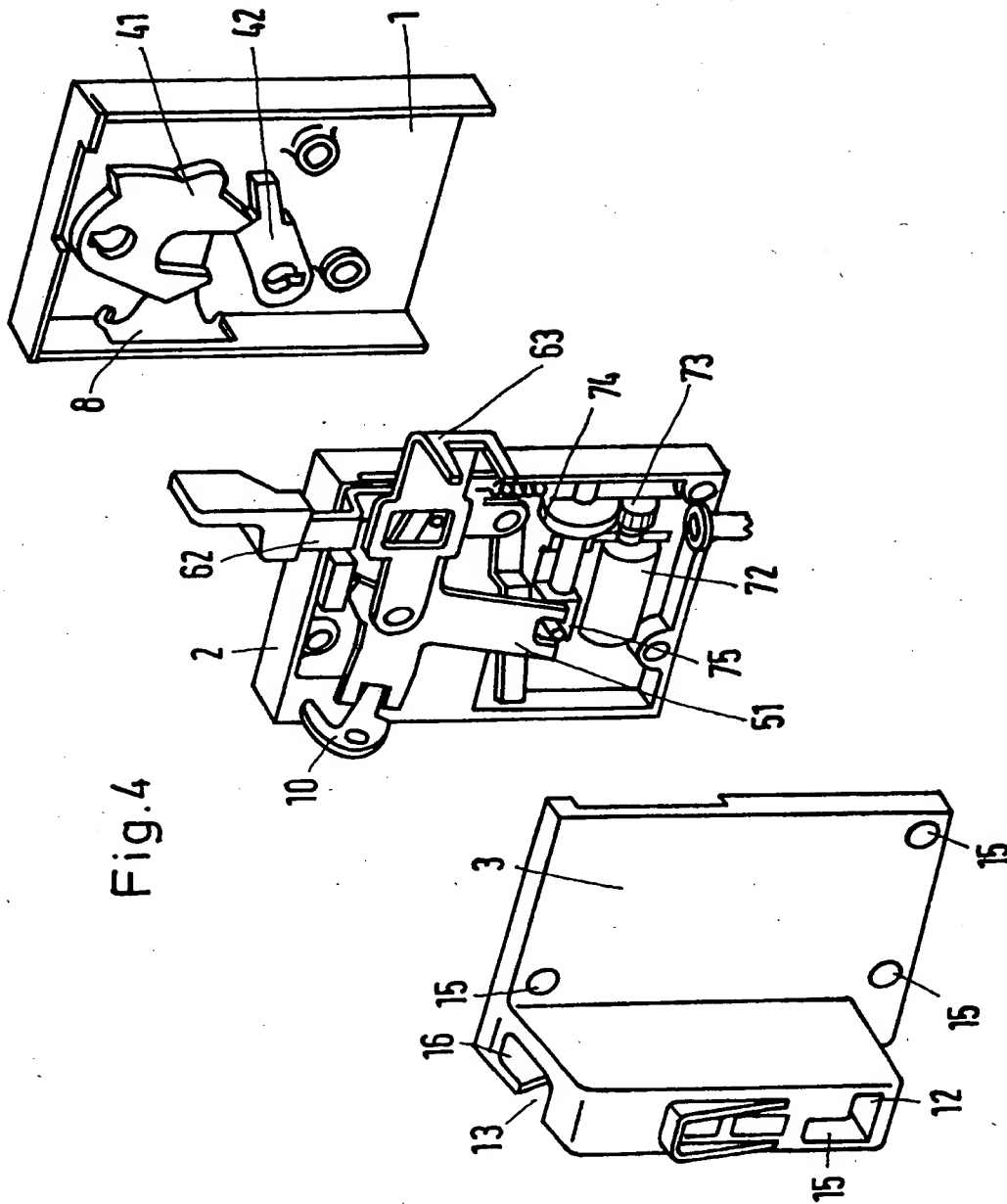


Fig.3



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Fig. 5

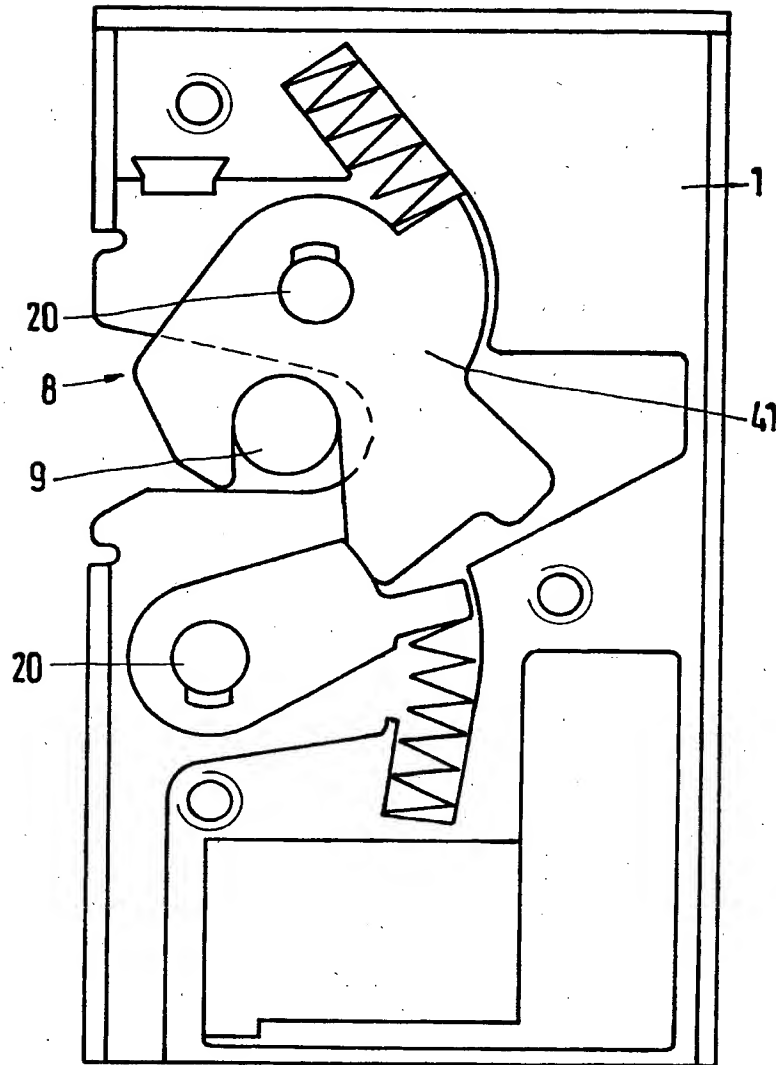


Fig. 6

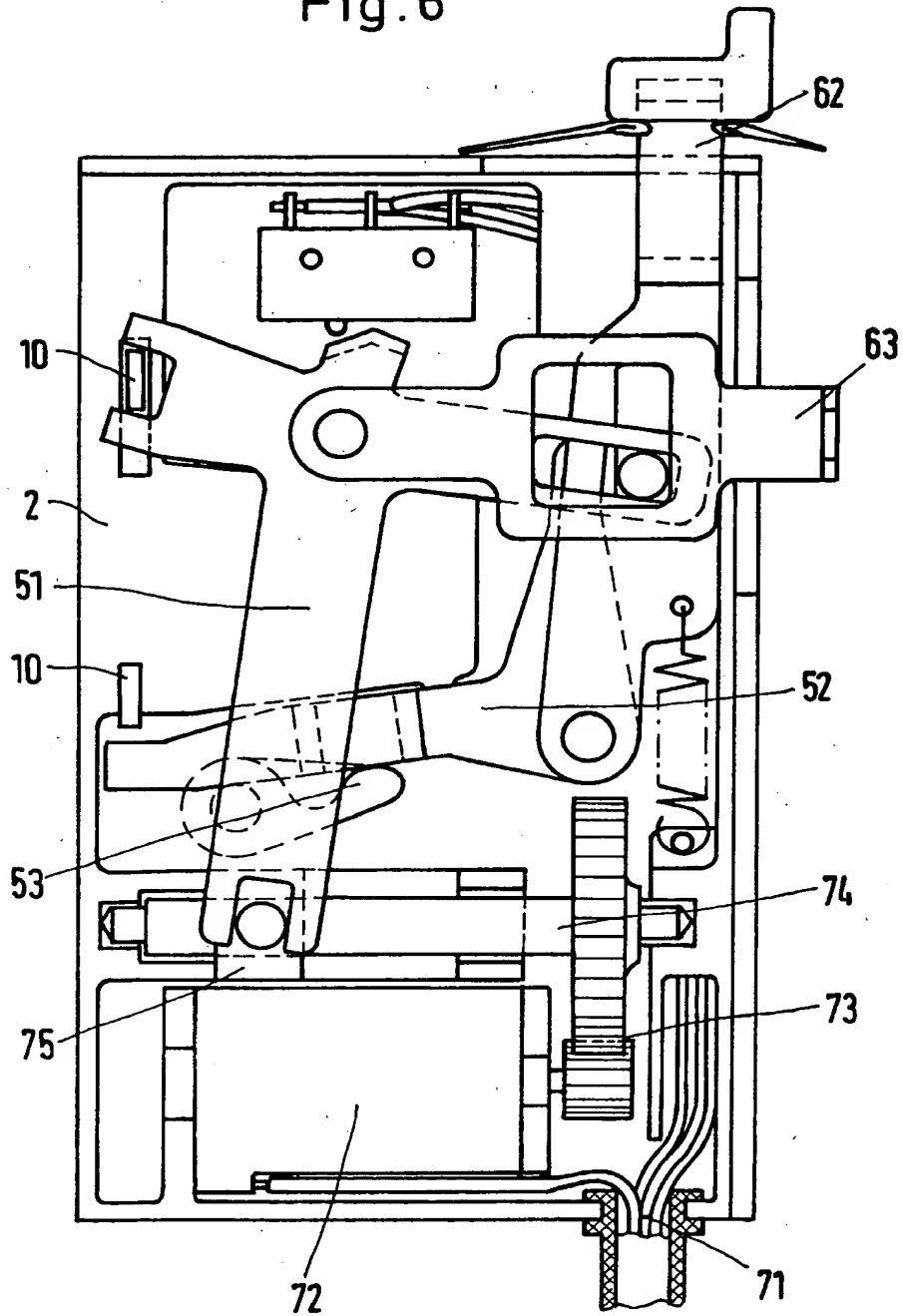
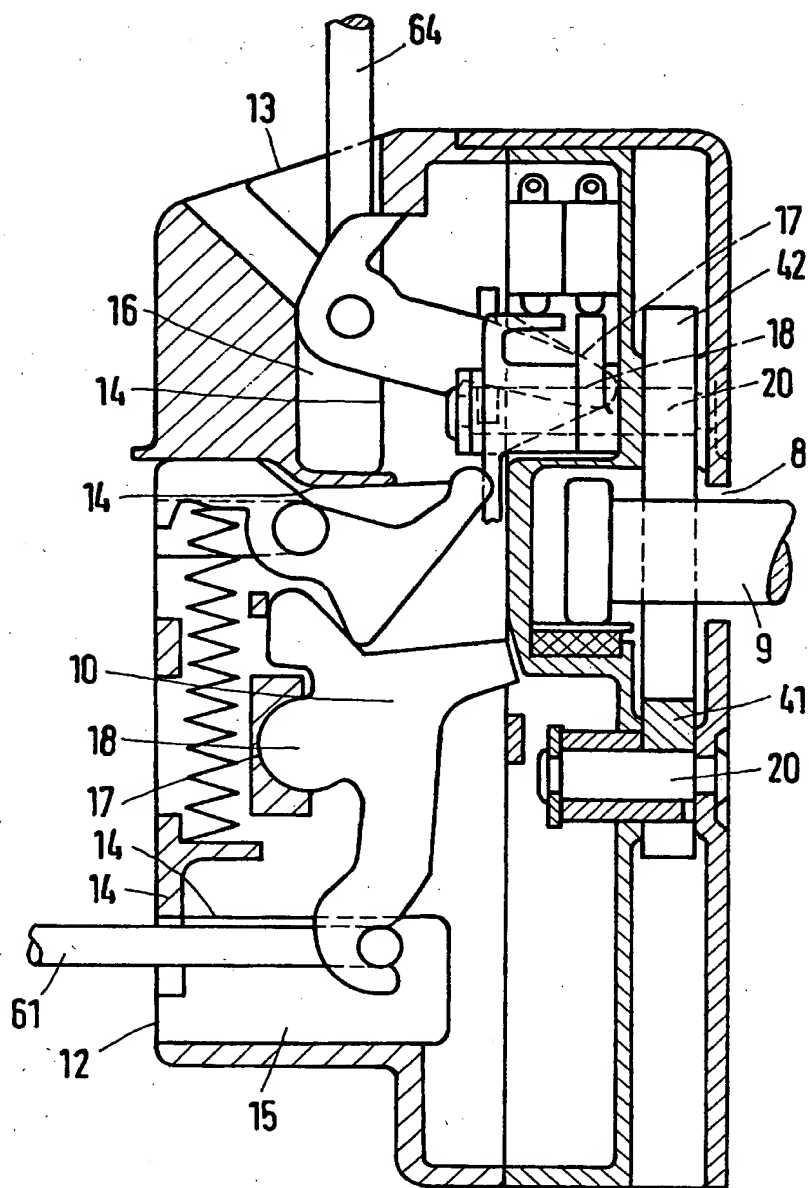


Fig.7



SPECIFICATION

Motor vehicle door lock

5 This invention relates to a motor vehicle door lock having, a casing, closure members, locking members, and actuating members for the locking members, in which the actuating members include an inner-actuation setting rod, an
10 outer-actuation lever, a locking-cylinder connection lever and an inner security setting rod, the closure members comprising a swivel bolt, for example a forked bolt, and a catch, while the locking members are additionally linked to
15 a central locking system, through a setting motor equipped with a multi-core cable, and furthermore the closure members and the locking members are mounted in and on the casing, which has a locking-bolt mouth for an associated locking bolt.
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In a known motor vehicle door lock of this type, the casing has been reduced to a simple single-piece lock plate, which is not enclosed and which carries both the closure members
25 and the locking members and leads to a generally compact construction. The setting motor is disposed in a separate housing or on a separate mounting plate, and is only functionally attached to the motor vehicle door
30 lock. Consequently, the locking members are accessibly disposed on the lock plate inside the motor vehicle door. This is a disadvantageous arrangement with reference to its security against unauthorised opening with the aid
35 of tools inserted into the interior of the motor vehicle door in question, since skilfully made and manipulated tools can gain a purchase on the locking members, so that the motor vehicle door lock can be unlocked to give
40 unauthorised entry to the inside of the motor vehicle. Entry can similarly be gained by unauthorised tampering with the setting motor.

The object of the invention is to provide an improved motor vehicle door lock of the type
45 initially described, without interfering with its generally compact construction, such that when the motor vehicle door lock has been assembled in the motor vehicle door the locking members are no longer accessible, so that
50 tools inserted without authority into the motor vehicle door cannot be manipulated so as to open the motor vehicle door lock.

According to the present invention, a motor vehicle door lock is characterised in that the
55 casing consists of a closure-member box, a locking-member box and a connection box, the closure members being mounted in the closure-member box, which incorporates the locking-bolt mouth and the face of the locking-member box remote from the closure-member box carrying the locking members,
60 the outer-actuation lever, the locking-cylinder connection lever and the setting motor of the central locking system, which motor is
65 equipped with the multi-core cable, while the

connection box is adapted for connecting both the inner-actuation setting rod and the inner security setting rod and has suitable connecting members for coupling to the locking members and in that the closure-member box, the locking member box and the connection box are formed as independent prefabricated units which can be assembled together like blocks with the aid of assembly screws to form a
70 security capsule in which the connection box is enclosed except for apertures for the insertion of the inner-actuation setting rod and the inner security setting rod, while the only components protruding from the locking-member
75 box are the outer-actuation lever, the locking-cylinder connection lever and the multi-core cable.
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The invention arises from the realisation that the object as stated above cannot be satisfactorily achieved by merely providing a motor vehicle door lock of the known type, having a casing reduced to a lock plate, with as it were a lid to encapsulate the otherwise accessible components. Such encapsulation could only
90 remain incomplete; it would leave the locking members and the setting motor still freely accessible from the side facing the closure members, and could not prevent the unauthorised opening of the motor vehicle door lock with the aid of a suitable tool. The setting
95 motor would still remain accessible. Indeed, the lid would be a nuisance, as a non-functional space-consuming component which could not easily be secured to the lock plate.
100 The invention on the other hand ensures first that after the motor vehicle door lock has been assembled in the motor vehicle door the locking members are no longer accessible, so that unauthorised actuation by the insertion of
105 tools is excluded, and secondly that an outstandingly robust system which meets all the production requirements is built up by the closure-member box, the locking-member box and the connection box.
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There are various possibilities for further adaptation and improvement within the scope of the invention. In view of the loads it has to carry, the closure-member box should usually be formed from sheet steel. The locking-member box and the connection box can alternatively consist of plastics mouldings, but metal diecastings or the like are equally suitable. To prevent the insertion of unauthorised tools through the apertures for the inner-actuation
115 setting rod and the inner security setting rod, the lock is preferably provided in the vicinity of the apertures for the inner-actuation setting rod and the inner security setting rod, the connection box has channel-forming webs and/or partition walls forming isolated insertion
120 channels in which the connecting members are disposed, and the inner-actuation setting rod and the inner security setting rod are inserted into the insertion channels and locked to the connecting members. The connection box and
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the locking-member box preferably have shaped bearing sockets into which fit complementary bearing cups on the connecting members.

- 5 An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a motor vehicle door lock in accordance with the invention;

Figure 2 is an exploded perspective view of the individual assembly units of the lock of figure 1;

Figure 3 is a perspective view, in the direction of the arrow A in Figure 1;

Figure 4 is an exploded view of the individual assembly units in the same direction as in Figure 3;

Figure 5 is an elevation of the closure-member box from the same side as in Figure 4 and revealing additional components;

Figure 6 is an elevation of the locking-member box from the same side as in Figure 4; and

Figure 7 is a section, taken on the vertical plane through the line B-B of Figure 3.

The motor vehicle door lock shown in the drawings comprises a casing consisting of boxes 1, 2, 3; closure members referred to as a group 4 and numbered individually as 41, 42; locking members referred to as a group 5 and numbered individually 51, 52, 53; actuating members for the locking members, referred to as a group 6 and numbered individually as 61, 62, 63, 64; and a central locking system referred to as a whole group 7 and numbered as individual components 71, 72, 73, 74, 75 linked to the locking members.

The group 4 of closure members consists of a forked swivel latch 41 and a catch 42. The group 5 of locking members consists of a linking lever 51, a catch release lever 52 and a lever arm 53. The group 6 of actuating members consists of an inner-actuation setting rod 61, an outeractuation lever 62, a locking-cylinder connection lever 63 and an inner-security setting rod 64. The central locking system 7 consists of a multi-core cable 71, a setting motor 72, a transmission 73, a lead-screw 74 and nut 75.

The casing consists of a closure-member box 1, a locking-member box 2 and a connection box 3. The closure members 4 are mounted in the closure-member box 1, which incorporates a mouth 8 for an associated locking bolt 9. The face of the locking-member box 2 further from the closure-member box 1 carries the locking members 5, the outer-actuation lever 62, the locking-cylinder connection lever 63 and the setting motor 72 of the central locking system 7, which motor is equipped with the multi-core cable 71. The connection box 3 is adapted for connecting both the inner actuation setting rod 61 and

the inner security setting rod 64 and has suitable connecting members 10 for coupling to the locking members 5. The closure-member box 1, the locking-member box 2 and the connection box 3 are formed as independent prefabricated units which can be assembled together like blocks with the aid of assembly screws 11 to form a security capsule. The connection box 3 is enclosed except for apertures 12, 13 for the insertion of the inner-actuation setting rod 61 and the inner security setting rod 64. The only components protruding from the locking-member box 2 are the outer-actuation lever 62, the locking-cylinder connection lever 63 and the multicore cable 71. The closure-member box 1 is formed from sheet steel. The locking-member box 2 and the connection box 3 are plastics mouldings.

Reference to Figures 3 and 7 will reveal that in the vicinity of the apertures 12, 13 for the inner-actuation setting rod 61 and the inner security setting rod 64, the connection box 3 has channel-forming webs and/or partition walls 14 forming isolated insertion channels 15, 16. The connecting members 10 extend into these insertion channels 15, 16. The inner-actuation setting rod 61 and the inner security setting rod 64 can be inserted into the insertion channels 15, 16, where they can be locked to the connected members 10, by rotation of the inner-actuation setting rod 61 and a swivelling motion of the inner security setting rod 64. These setting rods 61, 64 are securely held in this assembled position. Figure 7 further shows that the connection box 3 and the locking-member box 2 have shaped bearing sockets 17 into which fit complementary bearing cups 18 on the connecting members 10.

Turning first to Figure 6, it will be seen that the connecting members 10 in the connection box 3 protrude into the locking-member box 2 and are coupled to the corresponding locking members 5. Turning next to Figure 7, it will be seen how the locking members 5 are disposed. Obviously, stubshafts 19 extend from the locking-member box 2 to the closure-member box 1, and are coupled with the shafts 20 for the catch 42 and the swivel bolt 41. Otherwise, the components shown function in the usual manner in motor vehicle door locks. The setting motor 72 drives the transmission 73 and the leadscrew 74 carrying the nut 75, which actuates the lever 51 coupled in the known manner with the catch release lever 52. The catch release lever 52 is also coupled with the locking-cylinder connection lever 63 and the outer-actuation lever 62. Actuation of the catch 42 is effected through the lever 53, which is keyed to the catch 42 in the manner shown.

CLAIMS

1. A motor vehicle door lock having a cas-

ing, closure members, locking members, and actuating members for the locking members, in which the actuating members include an inner-actuation setting rod, an outer-actuation lever, a locking-cylinder connection lever and an inner security setting rod, the closure members comprising a swivel bolt, for example a forked bolt, and a catch, while the locking members are additionally linked to a central locking system, through a setting motor equipped with a multi-core cable, and furthermore the closure members and the locking members are mounted in and on the casing, which has a locking-bolt mouth for an associated locking bolt characterised in that the casing consists of a closure-member box, a locking-member box and a connection box, the closure members being mounted in the closure-member box, which incorporates the locking-bolt mouth and the face of the locking-member box remote from the closure-member box carrying the locking members, the outeractuation lever, the locking-cylinder connection lever and the setting motor of the central locking system, which motor is equipped with the multi-core cable, while the connection box is adapted for connecting both the inner-actuation setting rod and the inner security setting rod and has suitable connecting members for coupling to the locking members and in that the closure-member box, the locking member box and the connection box are formed as independent prefabricated units which can be assembled together like blocks with the aid of assembly screws to form a security capsule in which the connection box is enclosed except for apertures for the insertion of the inner-actuation setting rod and the inner security setting rod, while the only components protruding from the lockingmember box are the outer-actuation lever, the locking-cylinder connection lever and the multi-core cable.

2. A motor vehicle door lock as in Claim 1, characterised in that the closure-member box is formed from sheet steel.

3. A motor vehicle door lock as in Claim 1 or Claim 2, characterised in that the locking-member box and the connection box are plastics mouldings.

4. A motor vehicle door lock as in any one of Claims 1 to 3, characterised in that the locking-member box and the connection box are metal diecastings.

5. A motor vehicle door lock as in any one of Claims 1 to 4, characterised in that in the vicinity of the apertures for the inner-actuation setting rod and the inner security setting rod the connection box has channel-forming webs and/or partition walls forming isolated insertion channels in which the connecting members are disposed, and in that the inner-actuation setting rod and the inner security setting rod are inserted into the insertion channels and locked to the connecting members.

6. A motor vehicle door lock as in any one of Claims 1 to 5, characterised in that the connection box and the locking-member box have shaped bearing sockets into which fit complementary bearing cups on the connecting members.

7. A motor vehicle door lock substantially as hereinbefore described with reference to the accompanying drawings.

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